

## **LISTING OF THE CLAIMS**

This listing<sup>1</sup> of claims replaces all prior versions and listings of claims in the application:

**1. (Currently Amended)** A radio wave propagation characteristics estimating system for determining [[the]] a frequency transfer function of [[the]] a radio wave by estimating [[the]] radio wave propagation characteristics on the basis of a ray tracing technique of tracing [[the]] courses of a plurality of [[the]] rays which approximate to approximating the radio wave radiated from a transmission point and detecting the rays arriving at a reception point, said system comprising:

a frequency determination unit operable to divide first-means for dividing the a spectrum of a radio signal of a target radio communication system into a plurality of bands and to determine determining the a frequency transfer function of a predetermined frequency of each of said plurality of bands by said radio wave propagation characteristics estimation, said predetermined frequency of each of said plurality of bands being used as a frequency of the radio wave radiated from said transmission point; and

an estimation unit operable to estimate second-means for estimating the radio wave propagation characteristics of said target radio communication system on the basis of the frequency transfer functions determined by said frequency determination unit first-means.

**2. (Currently Amended)** The system according to claim 1, wherein said estimation unit second-means estimates said radio wave propagation characteristics by filtering the frequency transfer functions determined by said frequency determination unit first-means with band pass filters having pass bands respectively corresponding to the plurality of bands obtained by dividing the spectrum, and arranging and synthetically combining the filtered frequency transfer functions on a frequency axis.

**3. (Currently Amended)** The system according to claim 1, wherein said frequency determination unit first-means comprises third-means for an acquiring unit adapted to acquire information on the arrival delay time and intensity of each of the rays arriving at said reception point for each of said predetermined frequencies by estimating said radio wave

propagation characteristics and determines the frequency transfer function for each of said predetermined frequencies on the basis of the information acquired by said acquiring unit third means.

4. **(Currently Amended)** The system according to claim 3, wherein said acquiring unit third means acquires information for each of said predetermined frequencies by tracing the courses of said plurality of rays only once.

5. **(Currently Amended)** The system according to claim 3, wherein said acquiring unit third means is provided for each of a plurality of directions to which the rays are radiated from the transmission point so as to carry out in parallel.

6. **(Original)** The system according to claim 1, wherein the number of a plurality of said predetermined frequencies is set on the basis of the extent of said spectrum of radio signal.

7. **(Original)** The system according to claim 6, wherein the extent of said spectrum of radio signal is the bandwidth of said spectrum of radio signal.

8. **(Original)** The system according to claim 6, wherein the extent of said spectrum of radio signal is the band distribution of said spectrum of radio signal.

9. **(Original)** The system according to claim 6, wherein the extent of said spectrum of radio signal is the bandwidth of said spectrum of radio signal having power over the power smaller than the largest power of the spectrum by a predetermined value.

10. **(Currently Amended)** A radio wave propagation characteristics estimating method for determining [[the]] a frequency transfer function of [[the]] a radio wave by estimating [[the]] radio wave propagation characteristics on the basis of a ray tracing technique of tracing [[the]] courses of a plurality of the rays which approximate to approximating the radio wave

radiated from a transmission point and detecting the rays arriving at a reception point, said method comprising:

a first step for dividing [[the]] a spectrum of a radio signal of a target radio communication system into a plurality of bands; [[and]]

determining [[the]] a frequency transfer function of a predetermined frequency of each of said plurality of bands by said radio wave propagation characteristics estimation, said predetermined frequency of each of said plurality of bands being used as a frequency of the radio wave radiated from said transmission point; and

a second step for estimating the radio wave propagation characteristics of said target radio communication system on the basis of the frequency transfer functions determined by said first step.

**11. (Currently Amended)** The method according to claim 10, wherein said radio wave propagation characteristics are estimated in said estimating operation second-step by filtering the frequency transfer functions determined in said dividing operation first-step with band pass filters having pass bands respectively corresponding to the plurality of bands obtained by dividing the spectrum, and arranging and synthetically combining the filtered frequency transfer functions on a frequency axis.

**12. (Currently Amended)** The method according to claim 10, wherein said dividing operation first-step comprises a third step of acquiring information on the arrival delay time and intensity of each of the rays arriving at said reception point for each of said predetermined frequencies by estimating said radio wave propagation characteristics, and the frequency transfer function for each of said predetermined frequencies on the basis of the information acquired in said acquiring of information third-step is determined in said dividing operation first-step.

**13. (Currently Amended)** The method according to claim 12, wherein said information is acquired for each of said predetermined frequencies by tracing the courses of said plurality of rays only once in said acquiring of information third-step.

**14. (Currently Amended)** The method according to claim 12, wherein said acquiring of information third step is provided for each of a plurality of directions to which the rays are radiated from the transmission point so as to carry out in parallel.

**15. (Original)** The method according to claim 10, wherein the number of a plurality of said predetermined frequencies is set on the basis of the extent of said spectrum of radio signal.

**16. (Original)** The method according to claim 15, wherein the extent of said spectrum of radio signal is the bandwidth of said spectrum of radio signal.

**17. (Original)** The method according to claim 15, wherein the extent of said spectrum of radio signal is the band distribution of said spectrum of radio signal.

**18. (Original)** The method according to claim 15, wherein the extent of said spectrum of radio signal is the bandwidth of said spectrum of radio signal having power over the power smaller than the largest power of the spectrum by a predetermined value.

**19. (Original)** A program product embodied on a storage portion of a computer and comprising code that, when said program product is executed, cause said computer to perform a radio wave propagation characteristics estimating method, said method determining the frequency transfer function of the radio wave by estimating the radio wave propagation characteristics on the basis of a ray tracing technique of tracing the courses of a plurality of the rays which approximate to the radio wave radiated from a transmission point and detecting the rays arriving at a reception point, said method comprising:

a first step for dividing the spectrum of a radio signal of a target radio communication system into a plurality of bands and determining the frequency transfer function of a predetermined frequency of each of said plurality of bands by said radio wave propagation characteristics estimation, said predetermined frequency of each of said plurality of bands being

used as a frequency of the radio wave radiated from said transmission point; and  
a second step for estimating the radio wave propagation characteristics of said target radio communication system on the basis of the frequency transfer functions determined by said first step.

**20. (New)** A processor-readable medium incorporating instructions configured to cause a computer to perform a radio wave propagation characteristics estimating method, said method determining a frequency transfer function of the radio wave by estimating radio wave propagation characteristics on the basis of a ray tracing technique of tracing courses of a plurality of the rays approximating the radio wave radiated from a transmission point and detecting the rays arriving at a reception point, said instructions comprising:

instructions configured to divide a spectrum of a radio signal of a target radio communication system into a plurality of bands and to determine a frequency transfer function of a predetermined frequency of each of said plurality of bands by said radio wave propagation characteristics estimation, said predetermined frequency of each of said plurality of bands being used as a frequency of the radio wave radiated from said transmission point; and

instructions configured to estimate the radio wave propagation characteristics of said target radio communication system on the basis of the frequency transfer functions determined.